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THE MECHANISM OF "CONVERSION"*

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"We talked of preaching and of the great success that the Methodists have. He [Johnson] said that was owing to their preaching in a plain, vulgar manner, which was the only way to do good to common people. . . . He said that talking of drunkenness as a crime, because it debases reason, the noblest faculty of man, would do no service to the vulgar. But to tell them that they might have died in their drunkenness and show how dreadful that would be, would affect them much."

Boswell's London Journal,† p. 329.

Religion, politics, and psychiatry often face a common problem—that of seeking the most effective means of bringing about rapid changes in an individual's beliefs and actions and afterwards trying to stabilize them. When I first became interested in the similarities of methods sometimes used by all three disciplines towards the end of the recent war, I little expected it to have the growing importance that attaches to it at the present time (Sargant and Shorvon, 1945). But the world suddenly finds itself again facing ideational conflicts, the outcome of which may decide its fate for centuries. The problem of the psychiatrist and his patient, of the religious leader seeking to gain and hold new converts, has now sometimes become the problem of groups of nations who not only wish to maintain certain beliefs within their boundaries but to gain fresh adherents to these beliefs from without.

Recently, for instance, Mrs. Charlotte Haldane pleaded that urgent psychological research should be undertaken into the mechanisms of the process by which she, the intelligent wife of a well-known British scientist, was converted to belief in Russian interpretations of Marxian dialectics, and, having accepted and followed these for many years, why the falsity of the whole system became apparent to her in an equally intense reconversion experience. Koestler and others have also described the same type of happening in their lives. There is also the bewilderment with which people witness the preparation of a person for his trial behind the "iron curtain" by a method which makes him not only believe but proclaim to the world that his past actions and ideas have been wrong and worthy of death, though shortly before he had thought them to be both right and honest.

These are, however, only examples of the same process occurring, for instance, in a person who, after a

religious conversion, may suddenly come to believe that a life of exemplary good works has not only been useless but even accompanied by the perils of eternal damnation because acceptance of one particular religious attitude has been neglected; or one who, after being subjected to psycho-analysis, is convinced that his past behaviour has been due to an intense underlying hatred of his father though he has previously always felt and acted in a particularly devoted manner to him. How are people induced to believe what may even be the opposite of the ascertainable facts?

Though both must overlap to some extent, the gradual and minor changes of outlook and behaviour of an individual, based on increasing maturity and experience, must be distinguished from those abrupt and total reorientations of viewpoint and action, often brought about by others, which involve the giving up of cherished beliefs, the adoption of new ideas, and perhaps views diametrically opposed to those previously held.

Physiological Aspects

In this lecture I wish to discuss some of the more physiological aspects of this problem in which I became interested by a fortuitous combination of circumstances. The recent war provided one of those rare opportunities of studying the breakdown of normal persons subjected to intense stresses. Drug abreactive techniques and other physical methods of treatment proved of great importance as aids to psychotherapy in such patients, and so became the subject of intensive research (Sargant, 1948). At the same time the first English translations of Pavlov's (1941) lectures on conditioned reflexes and psychiatry had appeared. And it was found that the symptomatology exhibited, and many of the empirical treatments discovered to be useful in breaking up the abnormal mental pattern occurring in war neuroses, had, in fact, been anticipated by Pavlov in his many years of work on experimental neuroses in animals. This suggested the desirability of a more careful study of his findings in relation to psychiatry than had been afforded them in recent years in Britain.

Seen in broad perspective, some of the phenomena witnessed during the abreactive and physical treatments of war neuroses also seemed to have many basic similarities to those reported in the literature of sudden religious conversion. After the war an opportunity suddenly presented itself of seeing at first hand in the U.S.A. some of the more violent and radical religious

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conversion methods still practised in parts of that country (Sargant, 1949). It seemed particularly important to learn more about these, as history showed that they had been able to change the face of England during the Methodist revival of the eighteenth century. As a result of the methods used then, which have largely died out in England but are preserved in the New World, it has been recorded that large numbers of the common people in England were so permeated by new religious attitudes that they became relatively impervious to the materialistic propaganda of Tom Paine and the French Revolution which swept the rest of Europe (Magnus, 1939). They had been made temporarily much more concerned about their fate in the next world than about conditions in the present one.

Physiological mechanisms are obviously only a part of the total process; but, because their importance is so often overlooked by those believing in the transcendence of reasoned argument over other methods, we are behind others in their use and understanding at the present time, and are often frankly bewildered when we see them in action and come face to face with their sometimes devastating effects on the human mind.

Experimental Findings in Animals Related to Man

In 30 years' experimental work on animals Pavlov accumulated a mass of observation on the various methods available for building up conditioned patterns of behaviour in the nervous system and breaking them down again (Frolov, 1938; Pavlov, 1941). Many physiologists and psychiatrists dispute Pavlov's mechanistic interpretations of his findings, but the actual experiments themselves have been confirmed repeatedly.

One observation of his seems especially important when considering the problem of suddenly induced changes of outlook and behaviour. A group of his dogs, conditioned after months of patient work, were trapped accidentally in their cages during the Leningrad flood of 1924. When finally rescued they were swimming about in their cages with their heads just above the still rising water. After being rescued some of them passed abruptly into a state of temporary cortical inhibition amounting to stupor, because of the fear and excitement experienced. The physiological shock had proved to be beyond the capacity of their nervous systems to deal with adequately, and had brought about what Pavlov termed "protective" cortical inhibition.

This traumatic experience had other interesting effects, for when the dogs were tested again after the inhibitory activity had passed off it was found that those who had shown this switch-over from profound excitation to severe inhibition had had many of their recently implanted conditioned reflexes dramatically abolished. Those dogs which had responded to their experience with strong excitement only were much less affected.

Great importance was attached by Pavlov to this chance observation, and it was eagerly followed up, for it seemed to provide a new and speedy means of breaking up implanted behaviour patterns in the nervous system, and in some of the dogs a completely new set of conditioned reflexes could be substituted with the abolition of the old. The weakest of the animals, however, were made permanently unstable by this experience; they were never able again to be reconditioned satisfactorily. This was termed a "physiological" rupture of higher nervous activity. Even in those in which a later satisfactory reconditioning was achieved, marked

sensitization to their traumatic experience remained. Months afterwards a trickle of water underneath the door of the laboratory would still produce obvious changes in their behaviour.

These findings may be relevant not only to the mechanics of a sudden conversion process but to an understanding of parallel findings in psychiatry after the use of drug abreactive techniques, shock treatment, etc. They probably also help to explain the building up of what psycho-analysts have termed "transference" situations that arise between therapist and patient during treatment.

Types of Inhibitory Phenomena

Psychiatrists outside Russia have also paid far too little attention to Pavlov's repeated emphasis on other types of pathological activity of the cortex that occur whenever the nervous system is stimulated, either psychologically or physiologically, beyond its particular limit of tolerance. (In the human subject fear-provoking thoughts and guilt feelings can be as productive of this form of "transmarginal" stimulation as other means of bringing it about in animals.) A state of increasing and uncontrolled excitement may supervene. But more commonly the cortex finally appears to impose various degrees of protective inhibition altering profoundly behaviour and response. Three phases of cortical inhibitory activity may appear before the total collapse phenomena already discussed supervene. The first is an "equivalent" phase, when all stimuli produce the same response instead of larger stimuli having more effect than lesser ones. The second is a "paradoxical" phase of cortical activity, when small stimuli produce a greater response than larger ones, the latter now serving only to increase inhibition still further. The third is the "ultraparadoxical" phase, when positive conditioning suddenly becomes negative and negative conditioned reflexes become positive.

Pavlov felt that these various types of inhibitory phenomena helped to explain hysterical and other abnormal behaviour in man. Ample confirmation of his findings was afforded clinically by our experiences with acute battle neuroses in the last war. Temporary breakdown occurred in many normal persons as a result of the intensity and continuity of stimuli that are rarely encountered in peacetime. A near-by bomb explosion, for instance, might produce just such uncontrolled states of excitement as Pavlov described, and also excellent examples of both focal and generalized states of paradoxical and ultraparadoxical cortical activity. Final stupor might also intervene. Thus hysterical paralyses and amnesias became much more common than in peacetime, and in these it was often seen that the more the individual struggled to regain normal function in these states the more inhibited he became—a good example of paradoxical cortical activity. The slow injection of sodium amytal, which in the right dose seems to relieve such inhibitory activity of the cortex, would often restore to normal function a limb or memory as soon as its effects began to work (Sargant, 1942).

Reversals of Behaviour Pattern

Temporary complete reversals of behaviour pattern, in which positive conditioning became negative and vice versa, are also commonplace in severe psychiatric illness in civilian practice. Gordon (1948) has quoted numerous examples in schizophrenic patients. As positive conditioning becomes negative, ideas previously

scorned may become suddenly acceptable, previous emotions of pleasure those of disgust, friends become enemies, and so forth. Pavlov suggested that an individual's thoughts can also become projected on the outside world during such abnormal states of cortical function. Another powerful mechanism brought into play once hysterical behaviour has been produced is an increased state of suggestibility. Confirmation of this is seen in hypnosis, and in the acceptance of the wildest improbabilities by those subjected to excitement or fear and exhibiting other evidence suggestive of cortical inhibitory phenomena.

A final set of observations particularly relevant to our problem was the means of breaking down those with stable nervous systems who were not unduly upset by excessive stimuli or conflict situations. Some animals proved remarkably stable under all sorts of experimental stresses. Patterns of behaviour might be disrupted only when physical debilitation or castration, for instance, had weakened their nervous stability for the time being. When such measures had to be used, the new patterns implanted proved some of the most difficult to remove again later after the animal had had time to adjust to castration or recover from the debilitating process. They could persist despite all efforts to alter them. This was attributed to the basic nervous strength of the animal, which now helped the perpetuation of the new patterns.

A similar precipitation is also seen in humans, producing unremitting types of obsessional and paranoid states. It is most likely to happen in previously stable personalities subject to stress during the menopause, after early removal of the ovaries, following a debilitating illness with severe loss of weight, or after drastic operative procedures. Prolonged nervous stress and exhaustion can also bring it about, and patients can often describe the exact time and date when symptoms became implanted and have persisted ever since.

Psychiatric Treatment Observations in Man

Modern methods of psychiatric treatment must also be studied, as they are very relevant to our problem. In mental illness we are faced with persons who have adopted patterns of behaviour and thought which must often be changed to diametrically opposed ones. This is necessary so that delusions can be removed, ideas of guilt lessened, and basic drives directed into new and more profitable channels. And it is interesting to find that in recent years psychiatric treatment has undergone startling transformations. Intellectual argument and moral exhortation, used as treatment in their own right in the last century, have been increasingly abandoned, as in most severe forms of nervous and mental disorder they are without much effect.

The nervous system of the patient is now much more likely to be subjected to a variety of insults, both psychological and physical, because then better results seem to be achieved from the various forms of psychotherapy also given. Sometimes, for instance, in psychoanalysis the patient is placed on a couch daily and over the course of months or years is subjected to a process in which childhood fears, adolescent panics, previous guilt feelings, and as many past sources of terror and frustration as can be endured by the patient are brought to the surface by a process of "free association" directed by the therapist towards these experiences. As the analysis proceeds emotional storms mount

and the patient becomes more and more sensitized to the analyst. Transference situations, both positive and negative, begin to be built up. Physical debilitation may occur in the early stages of treatment because of the anxiety deliberately aroused. Finally a stage is reached when "resistance" to the particular psychotherapist's interpretation of the patient's symptoms is overcome. Possibly far-fetched explanations are at last believed in and acted upon by the patient.

These explanations would generally have been totally unacceptable prior to treatment and often diametrically opposed to previous beliefs. Many of the individual's patterns of behaviour may also be destroyed under this process, allowing new ones to take their place. These changes are consolidated so far as is possible, and behaviour is made consistent with the new "insight" gained. As one patient personally analysed by Freud reported: "For the first few months I was made to feel nothing but increasing anxiety, humiliation, and guilt. Nothing about my past life seemed satisfactory any more, and all my old ideas about myself seemed to be contradicted. When I had got into a completely hopeless state he then seemed to start to restore my confidence in myself and to piece everything together in a new setting."

Psycho-analysis may take longer to bring about what other more violent methods may sometimes achieve in a shorter time. During the recent war, for instance, patients admitted with battle neuroses had often had the first stage of disruption brought about by their experience prior to hospital admission. New stereotypies of thought and behaviour of an undesirable type might also have become implanted in the nervous system. An arm might jerk convulsively and repeatedly, or the mind be fixed on a past experience which could not be divorced from the terrifying emotions that had accompanied it originally. Such conditions might be dispersed by quite crude forms of abreaction. Thio-pentone would be injected or ether inhaled. While under the drug an incident or series of incidents of a terrifying or rage-producing nature would be sought for by the therapist, who would deliberately concentrate on such experiences and try to produce as violent an emotional explosion as possible. It was found that it was not always the experience abreacted that produced the best results in all patients, but often the amount of crude emotion that could be released.

A Link with Pavlov's Experiments

This important finding, which seemed to link abreaction with Pavlov's experiments, helped to stimulate this study (Shorvon and Sargant, 1947); for some patients might remember and emotionally relive a disturbing incident with no therapeutic effect. If, however, during a subsequent abreaction, excitement of a much greater degree of intensity could be aroused about the same experience, and emotional release was forced to a point in which the patient showed sudden collapse and temporary cortical inhibition, relief might be immediate. The patient would say his head had cleared suddenly and he felt freed from his fears. He could think about terrifying incidents without experiencing the emotions previously associated with them. We seemed, in fact, to be seeing the same abrupt break-up of recently implanted conditioned behaviour patterns as had occurred in some of Pavlov's animals after the Lenin-grad flood.

The two most disruptive emotions, and those producing the best effects from a therapeutic point of view, proved to be terror and anger. If terror incidents failed to produce sufficient excitement, another might be sought about which the patient could be stimulated to release great aggression. Several persons would sometimes be needed to control the patient while the explosive outburst of anger was maintained, till he fell back on the couch exhausted and inert. The best results were obtained in those whose abnormal patterns had only recently been implanted. Repeated abreactions might be necessary even when such terminal collapse phases occurred. If only excitement was released, longer courses of treatment were generally necessary. Dull and unemotional recitals of previous traumatic events were nearly always without therapeutic effect.

Few attempts were made to alter a patient's original beliefs and outlook by these methods. Our efforts were directed towards restoring as far as possible previously established attitudes by destroying more recently acquired ones. But, as treatment proceeded, a growing transference between the patient and the therapist generally occurred, with the more ready acceptance of new viewpoints and a temporary increased state of suggestibility. Some psycho-analysts actually used this shortcut method during the war to gain acceptance by their patients of their own particular doctrinaire conceptions of "insight." But equally good results were possible if other types of indoctrination were substituted.

Both the psycho-analytic method and drug abreaction have limited applications. They will be found most effective in persons with a fair degree of previous stability who under stress produce predominantly inhibitory types of symptomatology such as depression, amnesia, paralysis, indecision, excessive fatigue, poor concentration, and other hysterically flavoured symptoms. It seems that this tendency to develop abnormal inhibitory patterns of nervous activity under stress can also be used for their relief in treatment.

Neither method will be found so effective in chronic, strong, and persistent states of anxiety and tension without hysterical overlay, nor in the obsessional neuroses. In these a quite different response to attempted abreaction is obtained. Increasing excitement generally leads not to terminal switch-over to cortical inhibition and collapse but to a state of increasingly uncontrolled excitement. If treatment is pressed, mental confusion results which may require temporary admission to a mental hospital. Neither the same suggestibility nor acceptance of new interpretations of symptoms results from treatment. Moreover, on examining the past history of such patients they show little evidence of past inhibitory activity being primarily responsible for their troubles. On the contrary, they seem to have lacked normal powers of repressing past traumatic experiences. Unable to forget like normal persons, they may remain for years in a continued state of excessive excitation over past incidents. We are probably faced with a quite different pattern of nervous activity in such persons.

In deep states of depression a different picture also prevails. When abreaction is attempted emotional release can rarely be stimulated by psychological means or the use of chemical aids. The individual is so deeply inhibited and retarded that thought may be confined to one topic, and appetite, bowel movement, salivary secretion, and facial expression all lack mobility as well. Positive conditioning may have become negative, and

vice versa. However, substituting an electrically induced convulsion for a psychologically induced abreaction, and giving a series of these, can produce truly dramatic results. Thought rumination is dispersed; recently formed attitudes lose their hold on the patient, and older-established patterns of thinking are restored with the abolition of those often diametrically opposed to them which supervened during the illness.

It may not be without significance to our problem that both abreaction and convulsion therapy can be most effective when a state of nervous excitement is produced one way or another in the nervous system and carried on to the point when total cortical inhibition supervenes temporarily, just as in the Leningrad flood experiments, and that such treatments are less effective when severe tension, and not hysteria or depression, constitutes the clinical picture. Normal persons seem to respond to severe stresses by developing more mixed hysterical and depressive reactions than pure tension states when total breakdown finally occurs. Thus history records the re-discovery of the value of abreactive techniques in times of war, pestilence, and disasters of all kinds. In the Middle Ages a violent form of dancing was employed till the depressed person, being stimulated to a crescendo of excitement, finally collapsed in exhaustion. In 1565 Matthioli reported that extra musicians would sometimes have to be employed so that such dancing could be kept going up to its therapeutic endpoint (Hecker, 1844).

Modern Psychiatric Methods

It is not possible to discuss all the modern psychiatric treatments which seem to include evidence of a similar mechanism in their total action. The induction of hypoglycaemic excitement by means of insulin, which is carried on till deep coma occurs, is a recent example. If initial hypoglycaemic excitement is not great enough, then electric convulsion treatment given in insulin sopor may produce better results. Meduna has also described a treatment of neurosis by the inhalation of high CO₂ mixtures, another cerebral excitant leading on to coma; and the best results have been obtained, in our experience, in reactive depressions and in hysterically pre-disposed persons. Older methods, such as ducking- and swinging-stools, the firing off of guns, and other methods of producing terror states in the mentally deranged, would hardly have been used by psychiatrists of the past if good results had not sometimes occurred. Case selection has obviously been at fault in many instances.

We now know that ideas, and abnormal emotion centred round them, can in fact become so deeply rooted and fixed in the nervous structure of the brain, and accompanied by so much persistent excitation, that relief is finally obtained only by sectioning certain brain tracts, as in leucotomy. Even after operation the ideas may persist unchanged, but with the abolition of continued emotional reinforcement they may gradually lessen or become less of a burden to the patient (Sargant and Slater, 1950).

Loss of weight is often the precursor of breakdown. During the war this was very noticeable in those who began to show new abnormal types of response to stresses that had previously left them unmoved only after the loss of up to 30 lb. (13.6 kg.). Once such abnormal reactions got established they might be difficult to alter again simply by restoring physique, though the development of new ones was minimized. Psychiatry,

however, has only just begun to re-explore the planned use of debilitating procedures in an attempt to dislodge undesirable patterns of behaviour previously established. One successful example, however, may be the recently developed conditioned aversion treatment of alcoholism.

To cure compulsive drinking, not only has a pattern of nervous activity to be destroyed but a change of outlook should also be brought about to help to sustain a future life of teetotalism. The induced vomiting which helps to build up a conditioned aversion to alcohol can be used to produce other effects. The individual can be debilitated and progressively weakened by it. As the treatment proceeds, reversal of previous attitudes and suggestibility may become much more pronounced. A phase amounting to a conversion state may occur about the third or fourth day in a drastic treatment programme. This is the time when new ideas can also be implanted with much less resistance than previously. During the phase of induced suggestibility the most resistant patient may also be persuaded for the first time to consider joining Alcoholics Anonymous as a stabilizing follow-up procedure (Williams, 1951). But only reasonably stable persons who also show stability in their compulsive drinking habits can be helped by this short-cut method. The unstable psychopath has no stability to return to when his drinking is removed, and he invariably relapses.

Preliminary experiments have now been started towards applying variations of this technique to chronic tension states and obsessional neuroses, which prove so resistant to ordinary abreactive techniques and shock therapies because the strong excitation aroused does not readily switch over to inhibition. Repeated doses of apomorphine appear to lower tension profoundly, increase inhibition, and may induce a more suggestible frame of mind in some patients. It is too early to speak of results. But what has already been found is the toughness of the nervous system of some patients, confirmed by their response to other treatments. Apomorphine given four-hourly, with only glucose drinks, can bring some patients to the point of collapse in 24 hours. Yet a female patient, persistently anxious and ruminating on incidents that occurred two years previously, and whose illness had not responded to psychotherapy, abreaction, or E.C.T., was also unmoved by two days' apomorphine treatment. She was slightly shaken by four days of vomiting, with glucose drinks as her only intake. It finally needed another course of seven days' continued vomiting and debilitation before physical and mental collapse became imminent, her mind freed from some of the force of its obsessions, and leucotomy, at least temporarily, avoided. Nor was she very distressed by the treatment.

Religious Conversion

Carrying our study into a field where for centuries people have been made to accept new standards, look upon their past life as one of wickedness and sin, and achieve sudden reorientations of thought and action, we find much to confirm the importance of some of the observations so far reported. Furthermore, we may learn much more about the possibilities of the implantations of new beliefs as well as of destroying others.

During a year spent in the U.S.A. in 1947-8 it was possible to witness some of the more violent forms of conversion practised there, examples of which were also fairly common in Britain up to a hundred years ago.

Three different religious groups visited were found to use the same underlying method, differing only in minor points of technique and selection of suitable forms of disruptive excitation. One group at Cincinnati relied on noise, group excitement, and continuously repeated exhortations by evangelists working in relays, also helped by those who had already attained conversion. Twenty to forty persons, coming forward from a large congregation, might be seen kneeling along a rail. As one or other of them showed signs of responding to the excitement going on around them, or the impending transition into the stage of mental dissociation or collapse, he or she would be selected for special attention by the group in an effort to complete the process before passing on to another.

The final stage might be accompanied by an incoherent and abreactive type of jargon sometimes called "the gift of the tongues." It was also interesting to find that the production of sudden total collapse phenomena is referred to by this group as "wiping the slate clean." In the absence of alternative physiological explanation, the victims, experiencing an overwhelming emotional upheaval and often a feeling of having been changed in some unaccountable way, accepted suggestions that these happenings had been brought about by the Holy Ghost. With suggestibility temporarily enhanced, they were the more ready to try to accept a new way of life.

Evangelists with whom this matter was discussed had learnt by experience the desirability of achieving an end-point of this type if rapid alteration in a person's outlook was to be accomplished. They also tried to distinguish between the genuine and the purely imitative types of emotional release and dissociation copied from others. They were prepared to battle night after night with a potential convert till they considered the genuine phenomena had been brought about or the attempt had to be finally abandoned.

Poisonous snakes (tested and found to be genuinely so in later police court proceedings) were used by another group in Durham, North Carolina. Passed from hand to hand by those already having faith, the snakes were employed with great effect to hasten the production of convulsive states of excitement and dissociation when brought towards others in states of mounting tension and excitement. Profound autonomic disturbance was witnessed in some of the persons, and the end phase of exhaustion and collapse could be dramatic and abrupt. With such methods a state of stupor lasting hours or even days might occur, the convert finally emerging with a new outlook, or at least much more ready to accept one.

A negro group, also studied in Durham, N.C., employed jitterbug dancing as an effective excitant. A small space for this dancing was available in the church for those who were stimulated to it by mounting noise, excitement, rhythmic beating, and singing. They danced singly or in groups, and continued for up to three hours on and off until mental dissociation or collapse supervened. During this time they were subjected to exhortation and repeated simple statements about the beliefs desired of them.

Fasting was also employed in those resistant to conversion. Up to nine days on bread and water in a prayer-room, or complete fasting for up to three days before attendance at a faith-healing meeting, was reported. A negro parson who was asked about this

could only say that he found some people believed more easily on an empty stomach. An evangelist was met who had attained his own sudden conversion experience some years previously in a Georgia prison only while working on a chain gang and debilitated by wet beriberi.

No follow-up of the results of the methods seen could be made in the time available. But the literature on religion shows many stable conversions by such methods, besides instances of repeated backsliding and failures. Normal persons in a temporary state of conflict are more likely to achieve the stable conversions, however, than the constitutionally abnormal, provided a means of disruption can be found which is acceptable in its presenting form and the pressure exerted great enough.

As in psychiatric practice, depressions were seen in which the method had failed because no abreactive release could be produced, but which nevertheless responded satisfactorily to later electric convulsion therapy. One such patient had twice been relieved of depressive attacks by attendance at such meetings, but needed E.C.T. in a later and severer attack of depression. Such meetings also provided their quota of persons who had to be admitted temporarily to mental hospitals in states of excitement or suicidal depression. The precipitation of schizophrenia in a predisposed person was also seen. In fact, the results were comparable to those seen with too indiscriminate a use of modern shock and abreactive treatments, and probably in others subjected to the conversion techniques practised in the prisons behind the "iron curtain."

Sudden and abrupt reversals of behaviour occur which seem akin to the paradoxical and ultraparadoxical cortical activity described by Pavlov and seen in acute war neuroses. People report an overwhelming desire to love their enemies, the loss of fear of previously feared objects, a revulsion against old habits, a pathetic eagerness to embrace people and things previously despised. Furthermore, many become obviously sensitized to the agent of their disruption, the preacher often taking the place of the modern psycho-analyst in this respect.

Modern psychiatry has only recently realized the importance of group factors in therapy, a fact long ago appreciated by the experts in conversion techniques. John Wesley's alteration of the habits of large numbers in various parts of England in the eighteenth century was due to the fact that he found the initial breaking-down process and "instantaneous" conversion aimed at was only the first stage towards stable reorientation. Once conversion had been achieved in large meetings, the converts were split up into groups of no more than 12, who met once a week to talk over difficulties, deal in detail with their problems, and with a "class leader" continued their indoctrination. A snowball effect was created by the larger meetings obtaining the new converts, and so enlarging the number of smaller groups for indoctrination; and a centralized leadership was maintained through the appointed evangelists and class leaders. The small groups could also be used to exclude the undesirable convert, who became well known to his group in their subsequent private weekly meetings. People with dogmatic beliefs themselves obtain greater success with such methods because they are more sure about what they wish other people to believe. In modern psychiatry it also proves easier to implant authoritarian beliefs, such as are provided, for instance,

in the Freudian discipline; and presumably a similar state of affairs exists when Marxian dialectics are involved in a conversion process.

Conclusion

Though only one aspect of a very complicated problem has been emphasized, this study suggests that simple mechanistic principles possibly underlie many old and new methods of altering the thoughts, beliefs, and actions of men, though many different explanations have been given of them when used in various cultural settings. Results will depend on the types of nervous system subjected to such methods and the methods selected being acceptable to the person concerned in his particular culture or applicable to the circumstances in which he finds himself placed. Beliefs implanted may be true or false. The most "normal" persons—using our present concepts of normality—are generally those who condition smoothly and correctly to the changing habits and beliefs around them. Others who do so with difficulty, or are constitutionally unstable in a variety of ways, are more difficult to change or stabilize in later life.

When it is necessary to break up already fixed patterns of thought and behaviour intellectual argument alone is often ineffective. Emotions may have to be aroused to act as the initial disruptive agent, and to create, if possible, special states of brain activity conducive to reversals of old patterns or the more ready implantation of new ones. Examples given in this paper show such methods in some of their relatively simple forms. More subtle techniques are also available for the same purpose, probably aided by the same mechanistic principles.

Just as general medicine has advanced by abandoning abstract philosophies in favour of discovering more mechanistic approaches to alterations of bodily function, so a closer study of the mechanics of brain function may teach us about more effective ways of altering a man's thoughts and actions.

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The production of plastic lenses has greatly increased in recent years, and they are said to have certain advantages over ordinary glass lenses; they are safer in many ways, and if they did not scratch so easily they might well replace glass ones (*Vision*, Vol. 5, No. 2). They are indistinguishable from glass in appearance, and are about half the weight; as they cannot splinter, they are very suitable for use in rimless spectacles. Generally speaking, vision is clearer, because plastic lenses absorb less light. Since plastic is softer than glass, they are more liable to surface scratching, but unless the mark is very bad it makes practically no difference to the wearer, as there is no sharp reflecting edge to deflect the light. The raw material from which these lenses are made is a synthetic plastic, methyl methacrylate.